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09/197,643	11/23/1998	NAOKI KUWATA	Q52377	1520

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EXAMINER
TRAN, NHAN T

ART UNIT	PAPER NUMBER
2615	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/197,643	Applicant(s) KUWATA ET AL.	
	Examiner Nhan T. Tran	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-10 and 12-14 is/are rejected.

7)☒ Claim(s) 11 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 23 November 1998 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to because:

Figures 23 (a)-(e) are prior arts, and each of them should be labeled as "Prior Art".

Figures 2, 4 & 5 should show a function label for each component, i.e. printer (31), scanner (11).

Figure 6, at S140, "color blur pixe ?" should be changed to -- color blur pixel ? --

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 10, 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Maenaka et al. (US 5,552,827).

Regarding claim 1, Maenaka et al disclose an image processing apparatus, which is a color video camera 10, performing image processing on image data consisting of dot-matrixed pixels, generated by obtaining image data by a single-plate solid image pickup device 12 where a plurality of color filters of element color components are arranged in a mosaic in a nonuniform densities (see fig. 2-9; col. 3, lines 26-38) and supplementing the image data by calculation to change the nonuniform densities to uniform densities which are indicated in Maenaka et al's disclosure by detecting and correcting the false color pixel so that to change the pixel from a nonuniform density element in a pixel array to the uninform density element with respect to other pixels in the array (see col. 2, lines 4-7), the apparatus comprising:

a). A color-bur pixel detection unit, which is known as a false color pixel detection circuit 60, detecting a color-blur pixel (a false color pixel) in the image data (see fig. 2, 8 & 9; col. 2, lines 4-7 & 16-20 and col. 4, lines 44-46).

b). An image processing unit, which suggests the camera system 10 in fig. 2, performing image processing on pixels within a predetermined range (3x3) having the detected color-blur pixel as a reference pixel (the specific pixel), so as to reduce a color blur (see fig. 2-9, col. 9, lines 25-32 & col. 6, lines 35-39).

Regarding claim 2, Meanaka et al disclose that the color-blur pixel detection unit (the false color pixel detection circuit 60) detects the color-blur pixel based on change rate of element color intensity for a low-density color filter as shown in fig. 9, i.e. the low-density elements of

0.2 on the half right of the upper figure, between closely adjacent pixels which suggest G12 and G32 pixels (see fig. 8(A)-(B) & 9(A)-(D); col. 8, lines 26-32).

Regarding claim 3, the change rate of difference between a reference element color intensity and the element color intensity for a low-density color filter, between adjacent pixels, are detected by the color-blur pixel detection unit. The reference element color intensity could be either R or G or B element intensity in Meanaka et al's disclosure with respect to the cited lines of col. 14, lines 14-17.

Regarding claim 4, Meanaka et al clearly disclose that there are a plurality of low-density color filters (col. 3, lines 34-36), the color-blur pixel detection unit detects the color blur pixel based on the change rate of difference between element color intensities for the low-density color filters between adjacent pixels, which refer to the odd and even fields in Meanaka et al's disclosure (see fig. 7-9; col. 6, lines 35-39).

Regarding claim 5, the color-blur detection unit detects the color blur pixel based on the change rate between adjacent low-density pixels. As seen in figures 8 & 9, the vertical and horizontal correlation detection circuit 68 and 66 evaluate the vertical Sv and horizontal Sh values in which G12 and G32 are adjacent pixels as well as G21 and G23, respectively. (see col. 8, lines 47-55).

Regarding claim 6, Maenaka et al implicitly disclose that the image processing unit performs smoothing processing on color difference components by suggesting, "it's possible to prevent the false color signal from being produced" and "the color repeatability does not become bad" (see col. 9, lines 31-32 and col. 2, lines 47-48). The color difference components are obtained by subtracting luminance components from element color components of the pixels within the predetermined range having the color blur (false color) pixel as the reference pixel. This function is suggested by "an absolute value of a difference between the signals..." (see col. 8, lines 47-55) within the predetermine range of 3x3 (see col. 6, lines 39-45). The image processing unit would inherently return the smoothing process components to the initial element color components in order to properly function as Maenaka et al's disclosure.

Regarding claim 10, the image processing unit replaces a color difference component having a central value of color difference components by performing "the false color signal is prevented from being produced" (see col. 9, lines 47-54), obtained as analyzed with respect to claim 6 above.

Regarding claim 12, Maenaka et al disclose an image processing apparatus, which is a color video camera 10, performing image processing on image data consisting of dot-matrixed pixels, generated by obtaining image data by a single-plate solid image pickup device 12 where a plurality of color filters of element color components are arranged in a mosaic in a nonuniform densities (see fig. 2-9; col. 3, lines 26-38) and supplementing the image data by calculation to change the nonuniform densities to uniform densities, which are indicated in Maenaka et al's

disclosure by detecting the false color pixel in the pixel matrix and correcting the false color pixel to the true color pixel in the pixel matrix (see col. 7, lines 26-35 & lines 45-55), so that to change the pixel from a nonuniform density element (false color pixel) to the uninform density element (true color pixel) with respect to other pixels in the pixel matrix (see col. 2, lines 4-7), the apparatus comprising:

a) A memory 1H in which the image data being stored (see col. 3, lines 61-63).

b). A color-blur pixel detection circuit accessing the memory, indicating by "outputs a digital signal by 1 H" (see col. 3, line 63) and detecting a position of a color blur pixel based on the difference between a pixel of interest and its peripheral pixel while sequentially moving the pixel of the interest (see col. 8, lines 26-32)

c). A color-blur reduction processing circuit reading data of pixels within a predetermined range having the pixel of interest, detected as the color blur pixel, as a reference pixel (see col. 3, lines 64-66), then performing calculation to reduce a color blur, and updating data of the pixel of interest stored in the memory with calculated data (col. 9, lines 25-32 & col. 6, lines 35-39).

Regarding claim 13, Maenaka et al disclose an image processing method for performing image processing on image data consisting of dot-matrixed pixels, generated by obtaining image data by a single-plate solid image pickup device where a plurality of color filters of element color components are arranged in mosaic in nonuniform densities (see fig. 2-9; col. 3, lines 26-38) and supplementing the image data by calculation to change the nonuniform densities to uniform densities which are indicated in Maenaka et al's disclosure by detecting and correcting the false color pixel so that to change the pixel from a nonuniform density element in the pixel

matrix to the uninform density element with respect to other pixels in the matrix as analyzed with respect to claim 12 above (see col. 2, lines 4-7), the method comprising the steps of:

a). detecting a color blur in the image data (see col. 2, lines 4-7 & 16-21)

b). performing image processing on pixels within a predetermined range (3x3) having the color-blur pixel as a reference pixel (the specific pixel), so as to reduce a color blur (see fig. 2-9, col. 9, lines 25-32 & col. 6, lines 35-39).

Regarding claim 14, a medium containing an image processing control program for an image processing apparatus performing image processing on image data consisting of dot-matrixed pixels is inherently included in Maenaka et al's image processing apparatus in order for the image processing apparatus to function as disclosed with respect to claim 13 above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 7 & 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maenaka et al (US 5552827) in view of Takizawa et al (US 6,388,706B1).

Regarding claim 7, Maenaka et al do not explicitly disclose that the image processing unit performs edge enhancement processing. However, Takizawa et al expressly disclose an image processing apparatus containing an image processing unit CPU 11 (see fig. 1) that performs an edge enhancement processing through an interpolation process (see fig. 2(A),(B) & 3; col. 17, lines 14-17).

It would enhance the image processing unit of Maenaka et al by enabling a function of edge enhancement disclosed by Takizawa et al because such the edge enhancement function results in excellent color reproduction and sharpness (Takizawa et al, col. 4, lines 30-31).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image processing unit of Maenaka et al with the edge enhancement function disclosed by Takizawa et al to result in excellent color reproduction and sharpness.

Regarding claim 8, Takizawa et al show that the edge enhancement function of the image processing unit performs edge enhancement processing on pixels within a range (3x3) subjected to the smoothing processing (see col. 14, lines 25-28).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maenaka et al (US 5,552,827) in view of Kido et al (US 5,561,724).

Maenaka et al disclose all the limitations in claim 9 except for disclosing that if the size of a processing object image is large, the image processing unit increases the range subjected to

the smoothing processing, while if the size of the image is small, the image processing unit reduces the range subjected to the smoothing processing. However, Kido et al clearly teach an image processing unit increases or decreases a range, i.e. 5x5 or 3x3, subjected to the smoothing processing depending on the image size (see col. 5, lines 56-62).

It would reduce the image processing time by implementing the image smoothing range method taught by Kido et al into Maenaka et al's apparatus so that the image processing unit would perform efficiently on different image sizes via the selection of image smoothing range.

Therefore, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ the image smoothing range method from Kido et al into Maenaka et al's apparatus so that the image processing unit would perform efficiently on different image sizes via the selection of image smoothing range to reduce the image processing time.

Allowable Subject Matter

Claim 11 is objected to as being dependent upon a rejected base claim 1, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Meanaka et al., Kido et al. and Takizawa et al fail to disclose or teach that wherein if said image processing unit determines that said color blur pixel is an edge pixel, replaces color different component having a central value of color different components, obtained by

subtracting luminance components from element color components of the pixel within the predetermined range having said color blur pixel as the reference pixel, with a color difference component of said color blur pixel, while said image processing unit determines that said color blur pixel is not an edge pixel, performs smoothing processing on the color difference components, obtained by subtracting the luminance components from the element color components of the pixels within the predetermined range having the color blur pixel as a reference pixel.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T. Tran whose telephone number is (703) 605-4246. The examiner can normally be reached on Monday - Friday, 8:00am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew B Christensen can be reached on (703) 308-9644. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

NT.
August 12, 2002

ANDREW CHRISTENSEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600